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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/626,005	07/24/2003	Mark B. Lyles	068351.0140	9917

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EXAMINER
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XU, LING X

ART UNIT	PAPER NUMBER
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1775

DATE MAILED: 03/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/626,005	<b>Applicant(s)</b> LYLES, MARK B.	
	<b>Examiner</b> Ling X. Xu	<b>Art Unit</b> 1775	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 15 February 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election of Group I, claims 1-13 in the reply filed on 2/15/2005 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

### ***Specification/Priority***

2. Applicant has amended the specification to claim priority thereto by designating the present application as a continuation-in-part application of the US Application Serial No. 09/817,010 filed on March 24, 2001. The amended specification is objected to because the priority claim is improper. Applicant's priority claim was made on 2/15/2005 which is later than both the four months from the actual filing date of the present application (7/4/2003) and sixteen months from the filing date of the prior application (US application Serial No. 09/817,010 filed on 3/24/2001).

"If the application is an application filed under 35 U.S.C. 111(a) on or after November 29, 2000, the benefit claim of the prior application must be made during the pendency of the application and within the later of four months from the actual filing date of the application or sixteen months from the filing date of the prior application." See MPEP 201.11 (V).

Art Unit: 1775

***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2, 6-10 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Ritland et al. (US 5,614,043).

With respect to claims 1-2, Ritland discloses a metal-infiltrated ceramic material. The ceramic can be any ceramic such as alumina and mullite including silica (col. 3, lines 55-67). The ceramic is brought into contact with a molten metal and the molten metal enters the pore structure of the ceramic layer and fills substantially all of the open porosity (col. 5, lines 55-67). Although Ritland discloses that the metal fills substantially all of the open porosity, the pore are not completely filled and there should be a small percentage of the pores remained in the ceramic layer.

It should be noted that the process of the metal covalently bonded to the ceramic of the present application involves the critical step of introducing metal into the void space of the ceramic and melt the metal particles by electric current or other heat sources to make the claimed hybride material with metal covalently bonded with the ceramic, see pages 11 and 17-18 of the specification. Ritland discloses the same critical step of introducing the metal into the void space of the ceramic in the molten form, and the metal fills substantially most of the open pores of the ceramic. Therefore, the molten metal would also be able to form the same covalently bonded with ceramic as claimed.

With respect to claims 6-7, Ritland discloses that the metal can be copper or copper titanium alloy (col. 6, lines 1-55).

With respect to claims 8-10 and 12, Ritland discloses that the metal infiltrate substantially all of the void space of the ceramic through capillary action (col. 7, lines 1-30), which meets the limitations of claims 8-10 and 12.

Accordingly, Ritland meets all the limitations of claims 1-2, 6-10 and 12.

***Claim Rejections - 35 USC § 103***

4. Claims 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ritland, as applied to claim 1 above, and further in view of Lyles (US 2001/0044159).

As stated above, Ritland discloses the same metal ceramic hybrid material as claimed.

Ritland does not disclose the porous ceramic material comprising the specific component as recited in claims 3-5.

Lyles teaches the porous ceramic can be 100% silica, or up to about 60% alumina. The silica can be up to about 50% cristobalite (right column, page 1).

Lyles also teaches that the ceramic material can be used as reinforcement agents for organic inorganic or metallic materials (abstract).

Therefore, it would have been obvious to one of ordinary skill in the art to use these porous materials as claimed since these materials are more suitable to be used as reinforcement agents for organic, inorganic or metallic materials than other materials (page 1,[0001]), as taught by Lyles.

Art Unit: 1775

5. Claims 11 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ritland et al., as applied to claim 1 above, and further in view of the same reference.

As stated above, Ritland discloses that same metal ceramic hybrid material as recited in claim 1.

Ritland does not disclose the amount of the metal in the hybrid material as recited in claims 11 and 13.

However, differences in concentration will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration is critical.

“[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.” In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235(CCPA 1955)

Therefore, it would have been obvious to one of ordinary skill in the art to provide sufficient and optimum amount of the metal in the claimed material by routine experimentation.

### ***Response to Arguments***

6. The Examiner has withdrawn the rejection under 35 USC 102(b) based on Licari et al. and therefore, the argument related to Licari is moot.

Applicant's arguments related to Ritland et al. have been fully considered but they are not persuasive.

Applicant argues the amended claim 1 specifies that the hybrid material is composed of ceramic and metal including voids, and such a system is important for certain applications of the

Art Unit: 1775

present invention. Applicant argues that Ritland discloses a ceramic-metal composite fills the entire void space of the ceramic with metal.

With respect to the applicant added limitation of “a percentage of the void space remains void”, the Examiner has carefully reviewed the first paragraph of the specification on page 11 and has considered that the added limitation is not a new matter since the specification states that “between 1% and 99% of the void space may be filled with metal”, which implied that a percentage of void space may remains void. However, as stated in the same paragraph in the specification on page 11, at least 95% of the void space in the ceramic may be filled with metal or even 99% of the void space may be filled, which also implied that almost all the void may be filled.

As stated in the prior Office action, Ritland discloses the same metal ceramic hybrid material with metal filled substantially all of the open porosity in the porous ceramic portions. Ritland does not state that the metal is completely filled the open porosity in the porous ceramic portions and therefore, it should also have a percentage of the void space remains void. In another words, a substantially filled porous ceramic portion does not equal to completely or 100% filled porous ceramic portion.

In addition, in response to applicant's claim that a percentage of void space remains void is important for certain applications of the present invention, the specification does not provide any specific evidence to show that having a percentage of void space remains void is any significant for certain application of the present invention.

Art Unit: 1775

With respect to rejection under 35 USC 103, applicant argues that the cited art combination does not yield all the limitations of the claims because all limitations of Claim 1 are not disclosed in the Ritland.

The Examiner disagrees for the reason stated above that Ritland discloses all the limitations as recited in the claims.

Applicant also argues that the citation to the Lyles publication, naming the same inventor as the represent application lists, is not art of "another" and the Applicant has amended the specification to claim priority by designating the present application as a continuation-in part application of the Lyles publication.

First, it should be noted that the amendment made to the specification to claim the priority of the application of the Lyles publication is improper because Applicant's priority claim is made on 2/15/2005, which is later than both the four months from the actual filing date of the application (7/4/2003) and sixteen months from the filing date of the prior application (3/24/2001).

"If the application is an application filed under 35 U.S.C. 111(a) on or after November 29, 2000, the benefit claim of the prior application must be made during the pendency of the application and within the later of four months from the actual filing date of the application or sixteen months from the filing date of the prior application." See MPEP 201.11 (V).

Second, Lyles publication is published on 11/22/2001, which is more than one year prior to the effective filing date of the present application (7/24/2003). Accordingly, Lyles



Art Unit: 1775

publication is considered a 102(b) prior art regardless of whether the prior art has the same invention entity or is made "by others".

***Conclusion***

**7. THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

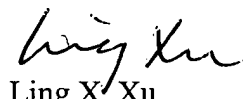
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ling X. Xu whose telephone number is 571-272-1546. The examiner can normally be reached on 8:00 - 4:30 Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Deborah D. Jones can be reached on 571-272-1535. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 1775

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Ling X. Xu  
Examiner  
Art Unit 1775